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1. (Amended) A method for reducing the amount of computations required to create a sound signal representing one or more sounds originating at a plurality of discrete positions in space, where the signal is to be perceived as simulating one or more sounds at one or more selected positions in space with respect to a listener, comprising the steps of:

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(a) determining a spatial characteristic function for a position in space at which sound originating at a plurality of positions in space is to be received, wherein said characteristic function represents a head-related impulse response;

(b) applying said characteristic function as a filter to the signal representing sound to produce a filtered signal; and

(c) converting the filtered signal to a sound wave and producing the sound wave for a listener.

9. (Amended) Apparatus for providing sound created by a sound source to a listener which simulates the sound source at a selected position in space with respect to the listener, comprising:

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(a) ~~an~~ input for receiving a signal representing sound originating at a plurality of positions in space;

(b) a left channel and a right channel, wherein each channel comprises a filter array for applying a filter to the signal received by the input to provide a filtered signal, the filter comprising a linear function including a spatial component which comprises a head-related impulse response;

(c) an output for converting the filtered signals from said channels to a binaural sound and for producing the sound for a listener.

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16. (Amended) An apparatus for providing sounds created by a plurality of sound sources to a listener which simulates the origin of each sound at a selected position in space with respect to the listener, comprising:

(a) an environment input for receiving information concerning a listening environment to be simulated and relative position of a listener;

(b) a calculator for receiving the information from said environment input,

and calculating attenuation and time delays to simulate said environment and said listener position;

- (c) a signal input for receiving a signal representing sound originating at a plurality of positions in space;
- (d) a left channel and a right channel attached to said calculator and receiving said calculation of attenuation and time delay therefrom, and also attached to said signal input and receiving said sound signal from said signal input, each channel comprising:

- (i) a source placement array for filtering said sound signal in accordance with a spatial characteristic function, wherein said spatial characteristic function is a head-related impulse response;
- (ii) an plurality of eigen filters attached to said source placement array and receiving the signal therefrom, wherein said eigen filters introduce time delays into said signal; and
- (iii) a signal output for attaching a speaker to the apparatus, attached to said plurality of eigen filters for receiving and summing the signals therefrom.

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